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BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT.

(2)

30628

Classification (~~Confidential~~) (Changed to CONFIDENTIAL)
By Authority of Joint Chiefs of Staff (Action 15 Apr 49)
By [redacted] Date 24 Sept 51
AFSWP

(11) 1947, (12) 53p. (14) XRD-48

U.S.S. TUNA (SS 203)

TEST ABLE [U]. (8)

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3690

BUREAU OF SHIPS GROUP.

TECHNICAL INSPECTION REPORT

Classification ([redacted]) (Changed to CONFIDENTIAL)
By Authority of Joint Chiefs of Staff (Action 15 Apr 49)
By [redacted] Date 3 Feb 51

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[redacted]

USS TUNA (SS203)

Page 1 of 53 Pages

[redacted]

[redacted] OCT 1948

GROUP-3
Downgraded at 12 year intervals;
Not automatically declassified.

1 JAN 1965

CONFIDENTIAL

TABLE OF CONTENTS

CONFIDENTIAL

U.S.S. TUNA (SS203)

SHIP CHARACTERISTICS

Building Yard: Mare Island Naval Shipyard.

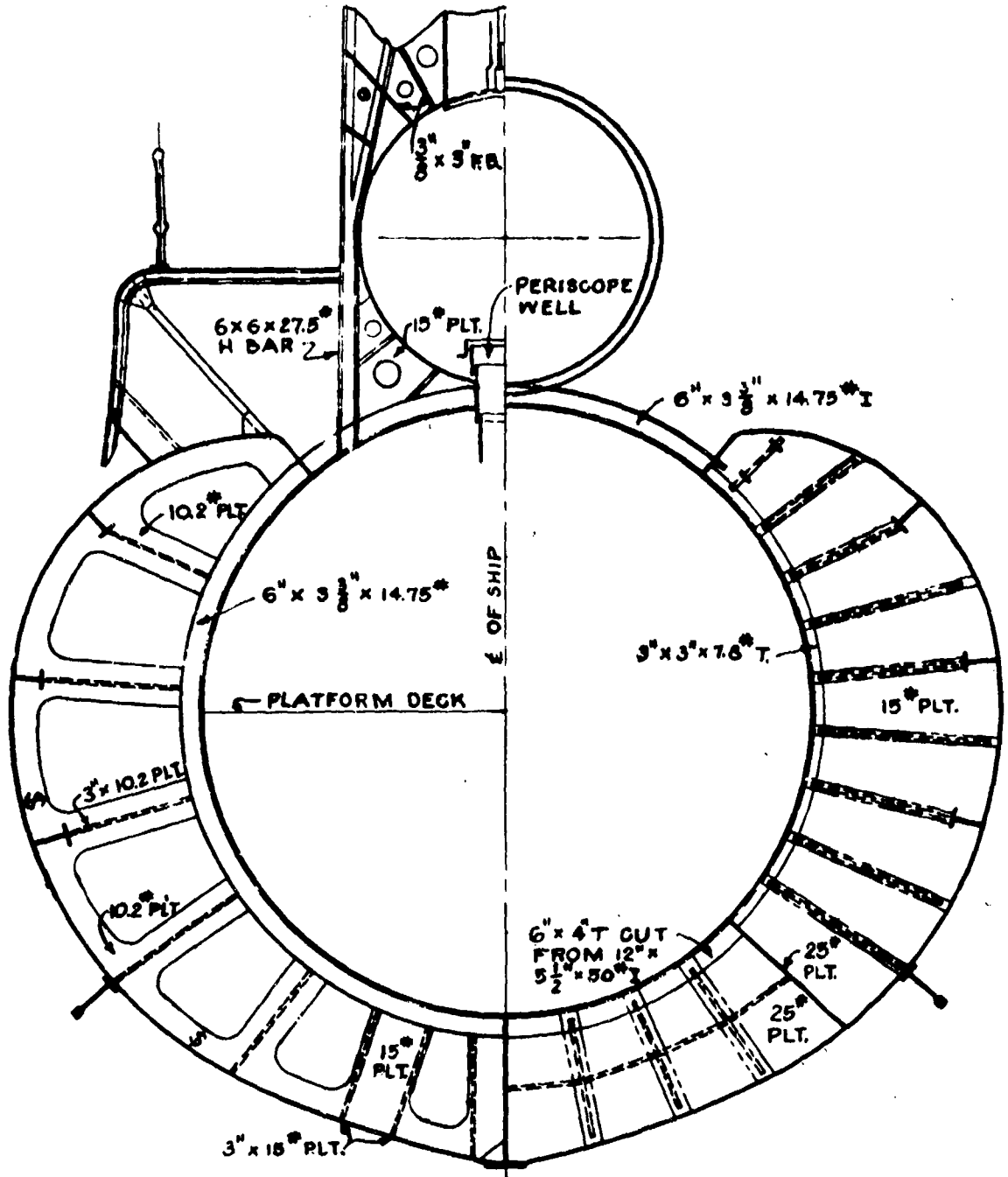
Commissioned: 6 January 1941.

HULL

Light Hull Construction.
Length Overall: 307 feet 0 inches.
Length (between perpendiculars): 302 feet 3 3/4 inches.
Beam (extreme): 27 feet 3 inches.
Beam (molded): 27 feet 0 inches.
Height (lowest point of keel to top of periscope supports): 47 feet 3 inches.
Drafts (at time of test): Fwd. 16 feet 4 inches.
Aft. 16 feet 9 inches.
Standard Displacement: 1475 tons.
Displacement (at time of test): 1942 tons.

MAIN PROPULSION PLANT

Main Engines: Four Fairbanks-Morse, 9 cylinder, Type 38D8
Auxiliary Engine: Fairbanks-Morse, 7 cylinder, Type 33D5.
Main Motors and Generators: General Electric.
Main Storage Battery: Exide.
Main Controls: General Electric.
Reduction Gears: Farrel-Birmingham.
Diesel Electric Drive.



TYPICAL LIGHTENED FLOOR & SECTION THRU SUPERSTRUCTURE LOOKING FORD.

WING BULKHEAD 52 LOOKING FORD.

TEST A

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

Draft and list were normal after the test, no flooding occurred.

(b) Structural damage.

No structural damage was experienced.

(c) Other damage.

Machinery, electrical, ship control, fire control and electronic equipment was fully operable after the test except the auxiliary gyro compass which was temporarily inoperable due to spillage of mercury.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There is a very slight scorching of the outer coat of paint on the vertical surfaces of the starboard side of the superstructure and conning tower fairwater. No scorching was noted on horizontal surfaces or where the vertical surfaces were shielded by other structure. The heat flash appears to have come from 60° relative, although this indicates the TUNA had swung considerably to the right, compared with other submarines. There were no apparent reflections of the heat wave back onto a surface which did not face the

blast. On this ship, some frame numbers had been painted with yellow chromate in Pearl Harbor and then sprayed over with one coat of an outside haze gray. The scorching of this paint where it covered the chromate painted frame numbers was much more severe than in the immediately adjacent area where there was no chromate under coat. The numerals stood out in scorched paint as sharply as if they had been painted. This effect was duplicated where some green chromate had been applied over a weld and then covered with haze gray. Exposed topside cables in some few instances had a light coating of char or soot which could be rubbed off with the fingers, but in no case was the insulation damaged.

(b) Fires and explosions.

No fires or explosions occurred.

(c) Shock.

Shock transmitted to the auxiliary gyro compass, probably through the ship's structure, caused spillage of mercury from the gyro. This could have been caused by a deep roll of the ship but no evidence throughout the rest of the ship indicates the ship took that large a roll. The direction of this shock could not be determined. The auxiliary gyro is in the control room but there is no evidence to indicate this part of the ship was a shock area. This compass can be put in complete working order by pouring in mercury to replace that lost. No other equipment showed evidence of shock.

(d) Pressure.

The "Coordinator's Report on Air Blast and Water Shock for Tests A and B" of 27 September 1946 indicates the peak air pressure was approximately 4.0 lbs. per square inch and the duration of the positive pressure phase was about 1.0 second. The elastic deformation of the hull, measured at four stations, was less than 0.04 inches.

(e) Any effects peculiar to the atom bomb.

Pressure, heat, slight radioactivity and shock sufficient to spill mercury out of the auxiliary gyro compass were the only noted effects peculiar to the atom bomb.

III. Effects of Damage.

(a) Effect on machinery, electrical and ship control.

None.

(b) Effect on gunnery and fire control.

None.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

It is believed there would have been no effect on personnel inside the sealed pressure hull but that exposed topside personnel would have suffered severe flash burns. Habitability is unimpaired.

(e) Total effect on fighting efficiency.

There is no reduction in fighting efficiency from a material standpoint. Exposed personnel topside would have been at least temporarily out of action.

IV. General Summary of Observers' Impressions and Conclusions.

The TUNA had been moored on the surface at a distance of approximately 2200 yards from the burst. From inspection, the

impression is formed that this ship was subjected to a directional flash of more or less instantaneous heat followed by a relatively high velocity wind. It is concluded that a submarine on the surface at this distance from an explosion of the type experienced in Test A will not be affected from a material standpoint but would have casualties among exposed topside personnel. Had the submarine been submerged, there would have been no damage and no casualties. For general views of the TUNA after Test A, see Photographic Section on pages 30 to 37.

V. Preliminary General or Specific Recommendations of Inspection Group.

If it is expected that submarines will be subject to such an attack it appears desirable to protect topside personnel to the maximum practicable extent with clothing and structural enclosures. As there is no significant material damage to this vessel no further recommendations are submitted herein.

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

There was no flooding and no change in list or draft.

(b) Structural damage.

There was no structural damage.

(c) Other damage.

None observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There is a very slight scorching of the outer coat of paint on the vertical surfaces of the starboard side of the superstructure and conning tower fairwater. No scorching was noted on horizontal surfaces or where the vertical surfaces were shielded by other structure. The heat flash appears to have come from 60° relative, which indicates the TUNA had swung considerably to the right, compared with other submarines. Photographs of the array show that the explosion bore about 70° relative. There were no

apparent reflections of the heat wave back onto a surface which did not face the blast. On this ship, some frame numbers had been painted with yellow chromate in Pearl Harbor and then sprayed over with one coat of an outside haze gray. The scorching of the paint where it covered the chromate painted frame numbers was much more severe than the immediately adjacent area where there was no chromate under coat. The numerals stood out in scorched paint as sharply as if they had been painted. This effect was duplicated where some green chromate had been applied over a weld and then covered with haze gray.

(b) Fires and explosions.

None.

(c) Shock.

No evidence.

(d) Pressure.

The "Coordinator's Report on Air Blast and Water Shock for Tests A and B" of 17 September 1946 indicates the peak air pressure was approximately 4.0 lbs. per square inch and the duration of the positive pressure phase was about 1.0 second. The elastic deformation of the hull, measured at four stations, was less than 0.04 inches.

(e) Effects apparently peculiar to the Atom Bomb.

None except as noted in paragraph II (a) above.

III. Effects of Damage.

(a) Effect on machinery, electrical and ship control.

Not observed.

(b) Effect on gunnery and fire control.

Not observed.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

Insofar as hull structure is concerned there is no effect on habitability. It is estimated that topside personnel exposed directly to the flash would have suffered severe flash burns.

(e) Effect on fighting efficiency.

None.

IV. General Summary of Observers' Impressions and Conclusions.

From inspection, the impression formed is that this ship was subjected to a directional flash of more or less instantaneous heat followed by a relatively high velocity wind. It is concluded that a submarine on the surface at such distance from an explosion of the type experienced in Test A will not be affected as far as hull material condition is concerned.

V. Preliminary General or Specific Recommendations of the Inspecting Group.

If it is expected that submarines will be subjected to such an attack it appears desirable to protect topside personnel to the maximum practicable extent with clothing and structural enclosures. As there is no significant material damage to this vessel no further recommendations are submitted herein.

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

No damage except as covered in Item T.

B. Superstructure.

No damage.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

No damage.

E. Weather Deck.

No damage.

F. Exterior Hull.

No damage.

G. Interior Compartments (above w.l.).

No damage.

H. Armor Decks and Miscellaneous Armor.

Not applicable.

I. Interior Compartments (below w.l.).

No damage.

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

None.

M. Ventilation.

No damage.

N. Ship Control.

No damage.

O. Fire Control.

No damage.

P. Ammunition Behavior.

No damage.

Q. Ammunition Handling.

No damage.

R. Strength.

No damage.

S. Miscellaneous.

No comment.

T. Coverings.

There is a very slight scorching of the outer coat of paint on the exposed vertical surfaces of the starboard side of the superstructure and conning tower fairwater.

U. Welding and Rivetting.

No damage.

TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition After Test A.

(a) Drafts after test; list; general areas of flooding, sources.

Draft and list were normal; no flooding occurred.

(b) Structural damage.

No structural damage was noted.

(c) Other damage.

All machinery and equipment undamaged and operable.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Momentary extreme heat from the direction of the bomb burst is evidenced by heavily scorched and blistered paint on vertical surfaces toward the burst.

(b) Fires and Explosions.

No fires or explosions occurred aboard.

(c) Shock.

No indication of shock was noted in the machinery installation.

(d) Pressure.

None evidenced.

(e) Effects apparently peculiar to the Atom Bomb.

Slight radioactivity and momentary extreme heat were only noted effects peculiar to the Atom Bomb.

III. Effects of Damage.

(a) Effect on machinery and ship control.

None. No damage.

(b) Effect on gunnery and fire control.

None. No damage.

(c) Effect on watertight integrity and stability.

None. No damage.

(d) Effect on personnel and habitability.

It is believed there would have been no effect on personnel inside the sealed pressure hull. Habitability was unimpaired. Personnel topside, exposed to the burst, would have received flash burns.

(e) Total effect on fighting efficiency.

None to material. Any personnel topside would have been at least temporarily out of action.

IV. General Summary.

It is apparent that a submarine sealed up as for diving and rigged for depth charge attack yet still on the surface would be undamaged by an air burst of an atomic bomb of similar strength and at similar range as the Test A Bomb.

V. Preliminary Recommendations.

None considered necessary.

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

Undamaged. All machinery was operated under service conditions with vessel underway. Diving equipment was tested by stationary trim dive.

(b) Areas of Major damage.

None.

(c) Primary cause of damage in each area of major damage.

None. No damage.

(d) Effect of target test on overall operation of machinery plant.

No effect. All machinery operable as before test.

B. Boilers.

Not applicable.

C. Blowers.

Not applicable.

D. Fuel Oil Equipment.

No damage.

E. Boiler Feedwater Equipment.

Not applicable.

F. Main Propulsion Machinery.

No damage.

G. Reduction Gears.

No damage.

H. Shafting and Bearings.

No damage.

I. Lubrication System.

No damage.

J. Condensers and Air Ejectors.

Not applicable.

K. Pumps.

No damage.

L. Aux. Generators (Turbines and Gears).

Discussed under Item F.

M. Propellers.

No damage.

N. Distilling Plant.

No damage.

O. Refrigeration Plant.

No damage.

P. Winches, Windlasses, and Capstans.

No damage.

Q. Steering Engine.

No damage.

R. Elevators, Ammunition hoists, etc.

Not applicable.

S. Ventilation (Machinery).

No damage.

T. Compressed air plant.

No damage.

U. Diesels (Generators and Boats).

Not applicable. See Item F.

V. Piping Systems.

No damage.

W. Hydraulic System.

No damage.

X. Navigational instruments.

No damage.

Y. Periscopes.

No damage.

Z. Radar and Sonar.

No damage.

AA. Miscellaneous.

None.

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding sources.

Not observed.

(b) Structural damage.

None.

(c) Other damage.

No electrical equipment was damaged or inoperable due to the test except the auxiliary gyro compass.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There was no evidence of heat having affected any equipment inside the pressure hull. Topside cables in some few instances, where completely exposed, had a light covering of char or soot which could be rubbed off with the fingers, but in no case was the insulation damaged at all.

(b) Fires and explosions.

None.

(c) Shock.

Shock transmitted to the auxiliary gyro compass, probably through the ship's structure, caused spillage of mercury from the gyro. No other electrical equipment showed any effect due to shock.

(d) Pressure.

There was no evidence of pressure damage.

(e) Any effects apparently peculiar to the atom bomb.

Other than slight radioactivity, the charring of the ship's superstructure on the side toward the blast, particularly on vertical surfaces, is the only phenomenon noted that may be considered peculiar to the atom bomb.

III. Effects of Damage.

(a) Effect on propulsion and ship control.

None.

None.

(b) Effect on gunnery and fire control.

None.

(c) Effect on watertight integrity and stability.

Not observed.

(d) Effect on personnel and habitability.

None except for possible radiological effects and probably heat or blast effects on exposed personnel.

(e) Total effect on fighting efficiency.

None.

IV. General Summary of Observers' Impressions and Conclusions.

There was no effect of any significance from the atom bomb on electrical equipment in this ship. It is considered that, even though on the surface, this submarine was outside the range of significant damage by the atom bomb.

V. Any Preliminary General or Specific Recommendations of the Inspecting Group.

None.

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

No damage except to the auxiliary gyro compass, which could be repaired by adding mercury.

(b) Areas of major damage.

None.

(c) Primary causes of damage in each area of major damage.

None.

(d) Effect of target test on overall operation of electric plant.

Except for the auxiliary gyro compass, the operability of the electric plant was in no way impaired, either directly or indirectly, by the atom bomb.

(e) Types of equipment most affected.

Only the auxiliary gyro compass was damaged.

B. Electrical Propulsion Rotating Equipment.

No damage.

C. Electric Propulsion Control Equipment.

No damage.

D. Generators - Ship's Service.

Not applicable.

E. Generators - Emergency.

Not applicable.

F. Switchboards, Distribution and Transfer Panels.

No damage.

G. Wiring, Wiring Equipment and Wireways.

No damage. Topside cables in some few instances, where completely exposed, suffered slight scorching of paint, but in no case was the insulation damaged.

H. Transformers.

No damage.

I. Submarine Propelling Batteries.

No damage. Batteries were fully charged and on open circuit during the test. Analysis of electrolyte samples after the test by Pearl Harbor Naval Shipyard revealed no significant changes attributable to the atom bomb.

J. Portable Batteries.

No damage.

K. Motors, Motor-Generator Sets and Motor-Controllers.

No damage.

L. Lighting Equipment.

No damage.

M. Searchlights.

No damage. The signal searchlight was removed prior to the test.

N. Degaussing Equipment.

Not applicable.

O. Gyro Compass Equipment.

No damage occurred except to the auxiliary compass in the control room, which spilled some mercury from its rotor bearings. This was apparently due to shock as there was no evidence of excessive rolling or pitching. The auxiliary gyro compass is an Arma Mark IX, Mod 2. This type of compass is susceptible to mercury spillage under shock as similar failures have occurred on other target submarines in Tests A and B. However, it is understood that this compass is now obsolete. The spilled mercury was cleaned off the sensitive element and the compass operated satisfactorily.

P. Sound Powered Telephones.

No damage.

Q. Ship's Service Telephones.

Not applicable.

R. Announcing Systems.

No damage.

S. Telegraphs.

No damage.

T. Indicating Systems.

No damage.

U. I.C. and A.C.O. Switchboards.

No damage.

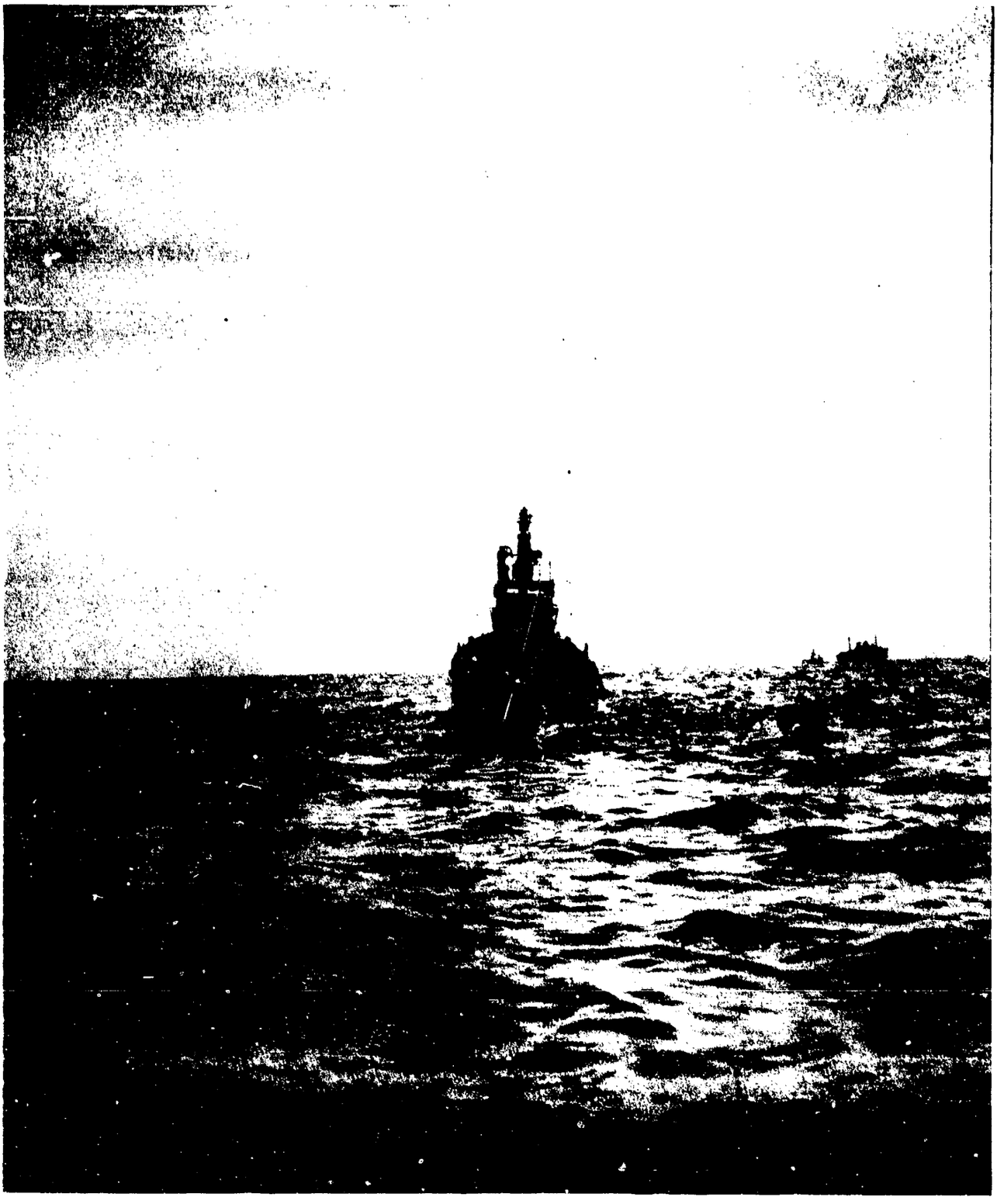
V. F.C. Switchboards.

No damage.

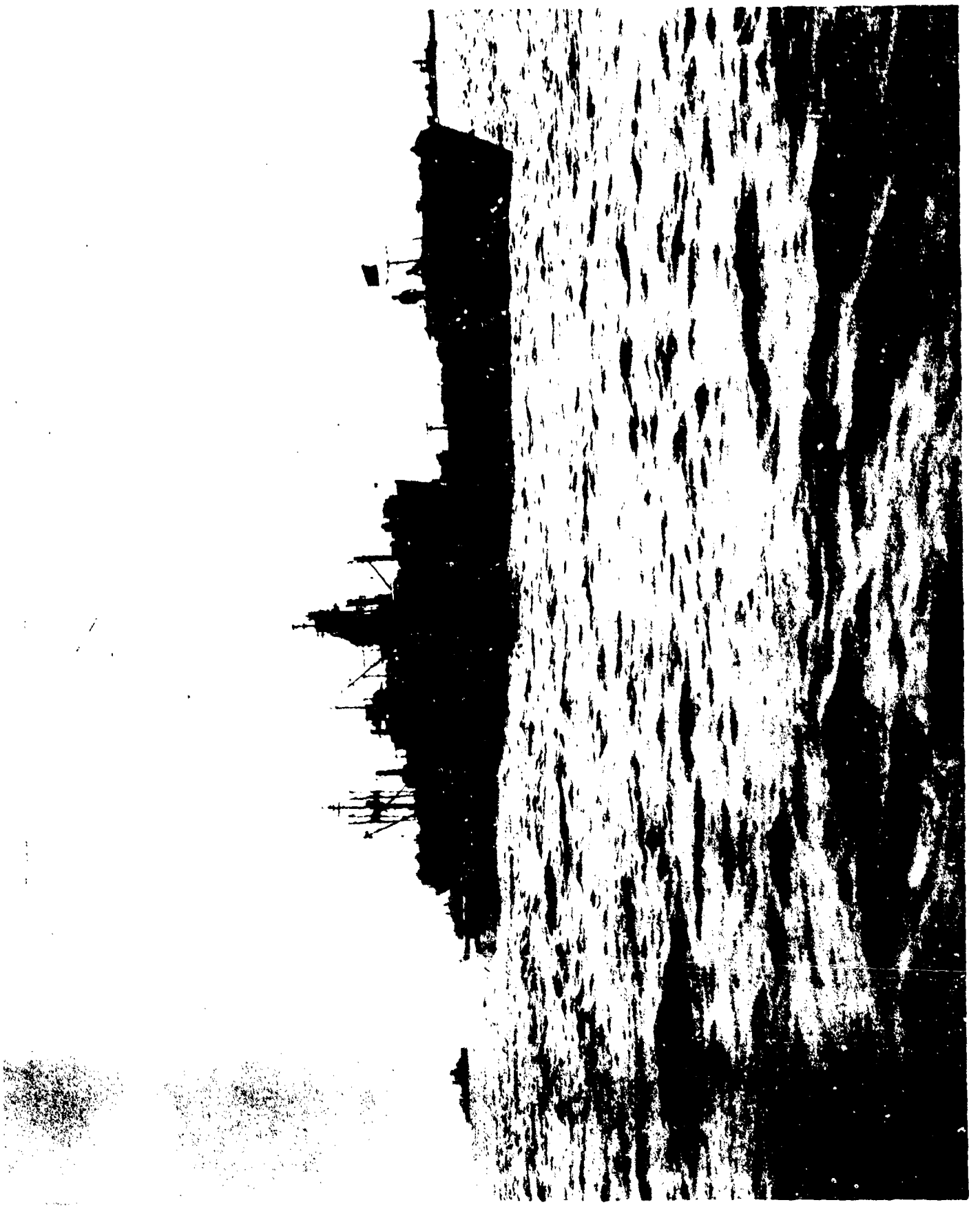
SECTION IV

PHOTOGRAPHS

TEST ABLE

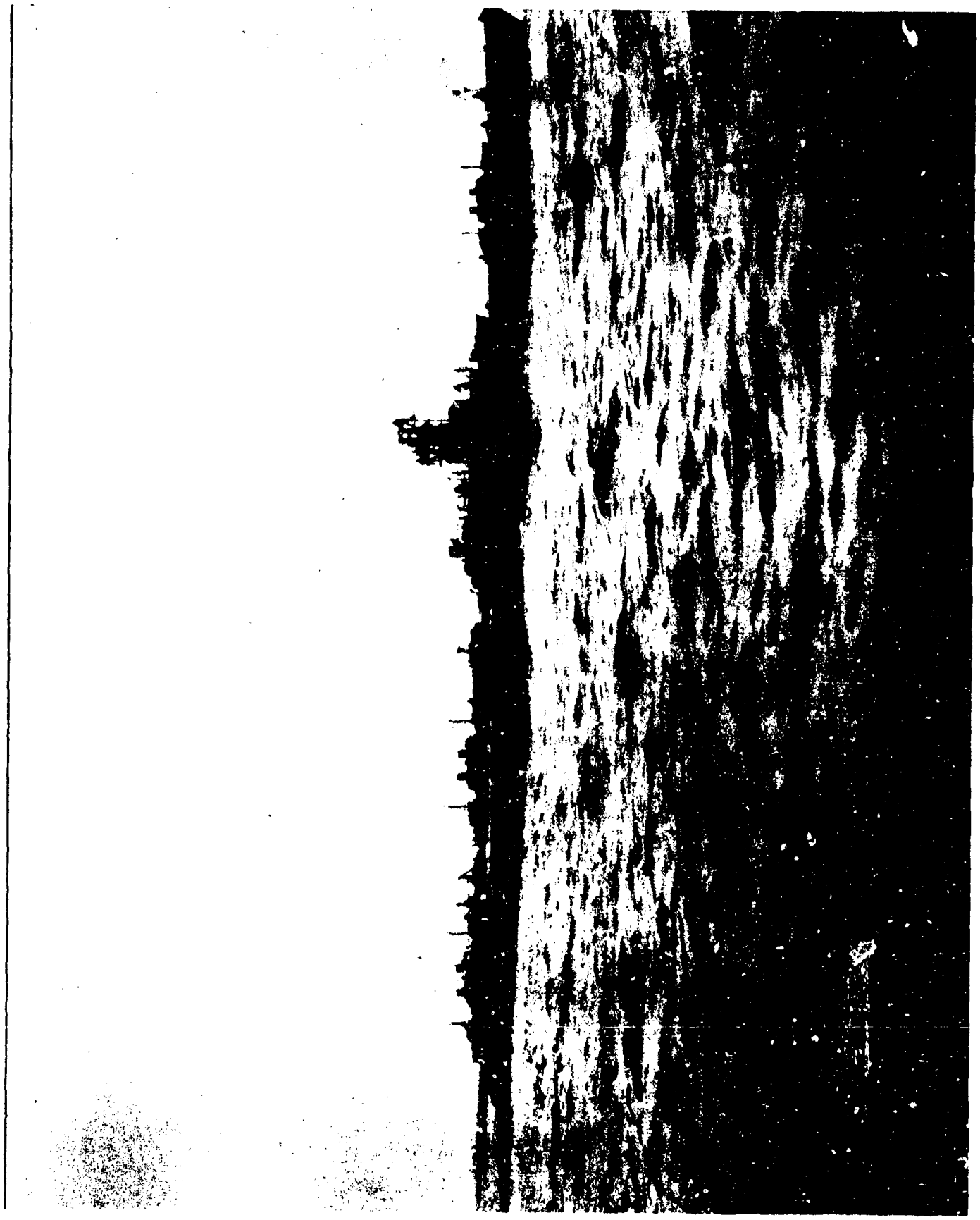


AA-CR-227-92-46. General view from ahead.



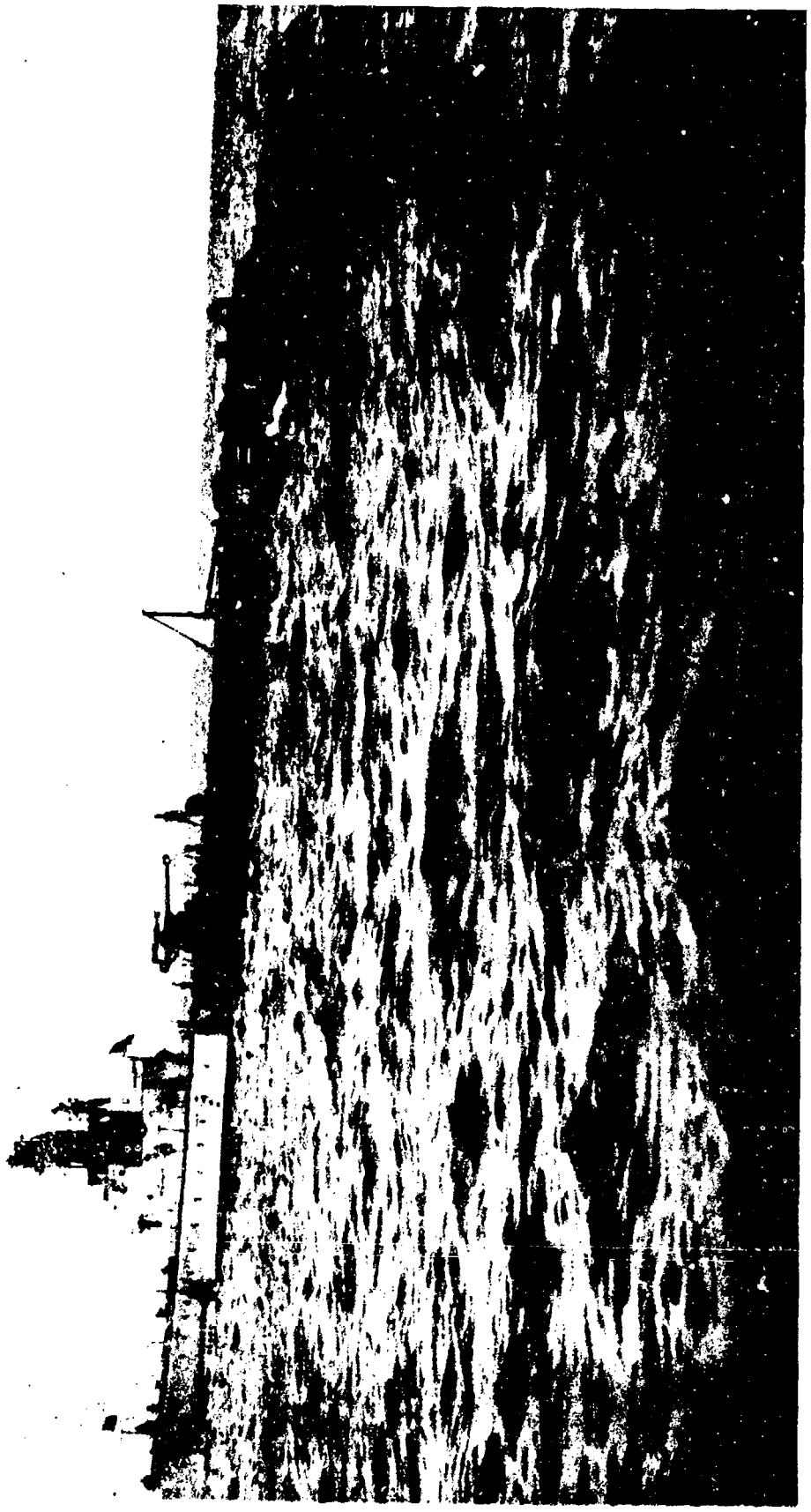
AACR-227-92-47 - General view from starboard bow.

AA-CR-227-92-48. General view from starboard beam.



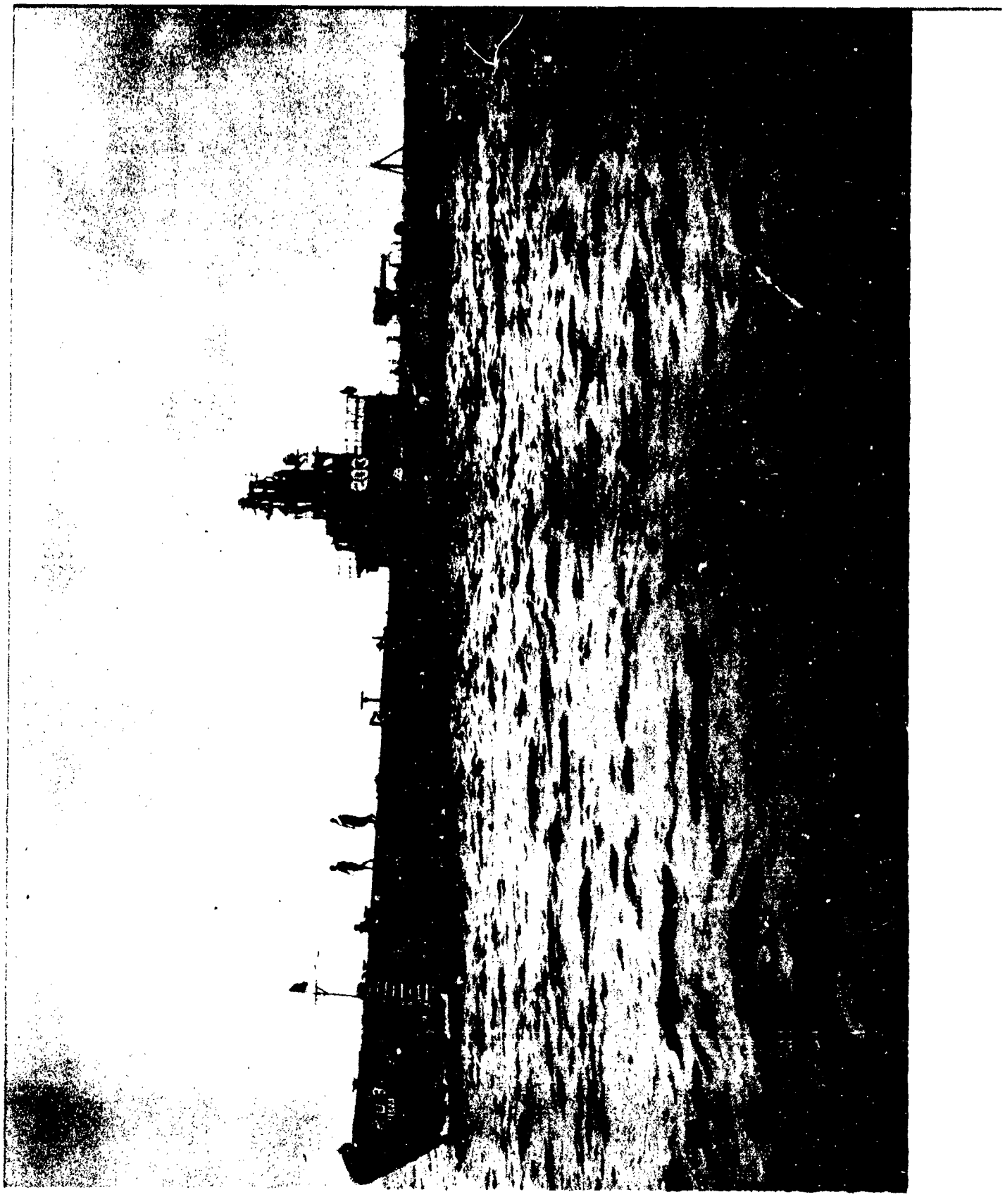
AA-CR-227-92-49. General view from starboard quarter.

AACR-227-92-50 - General view from astern.



AACR-227-92-51 - General view from port quarter.

AA-CR-227-92-44. General view from port beam.



AACR-227-92-45 - General view from port bow.

APPENDIX

COMMANDING OFFICER'S REPORT

TEST ABLE

II. Forces evidenced and effects noted.

(a) Heat: apparent direction (if any); extent longitudinally, transversely, penetration, significant behavior of structure or equipment.

1. Blast came from 060 degrees relative. Anchorage 110.

2. All paint on vertical structure starboard side received slight flash burns.

(b) Fires and Explosions: situation; nature of combustible or explosive; normal stowage; cause of ignition; extent and result.

1. None.

(c) Shock: apparent direction (if any); areas affected; critical scantlings; nature of joint failures (general); effect on machinery and equipment; significant behavior of structure and equipment.

1. None.

(d) Any effects apparently peculiar to the Atom Bomb.

1. None, except flash burn on paint.

III. Results of Test on Target.

(a) Effect on propulsion and ship control.

1. None.

(b) Effect on gunnery and fire control.

1. None.

II. Forces evidenced and effects noted.

(a) Heat: apparent direction (if any); extent longitudinally, transversely, penetration, significant behavior of structure or equipment.

1. Blast came from 060 degrees relative. Anchorage 110.

2. All paint on vertical structure starboard side received slight flash burns.

(b) Fires and Explosions: situation; nature of combustible or explosive; normal stowage; cause of ignition; extent and result.

1. None.

(c) Shock: apparent direction (if any); areas affected; critical scantlings; nature of joint failures (general); effect on machinery and equipment; significant behavior of structure and equipment.

1. None.

(d) Any effects apparently peculiar to the Atom Bomb.

1. None, except flash burn on paint.

III. Results of Test on Target.

(a) Effect on propulsion and ship control.

1. None.

(b) Effect on gunnery and fire control.

1. None.

(c) Effect on watertight integrity and stability.

1. None.

(d) Effect on personnel and habitability.

1. Bridge personnel probably would have received flash burns.

(e) Total effect on fighting efficiency.

1. None, except bridge personnel casualties.

IV. General Summary.

No damage was suffered by this vessel in Test A, but bridge personnel would, no doubt, have been casualties.

V. Preliminary Recommendations.

None.

SECTION III

PART C - INSPECTION REPORT

SECTION A - HULL

A. General Description of Hull Damage.

No damage.

B. Superstructure & Weather Decks.

No damage.

C. Turrets, Guns and Directors.

No damage.

D. Torpedo Tubes and Appurtenances.

No damage.

E. Weather Deck.

No damage.

F. Exterior Hull Above Waterline.

No damage.

G. Compartments.

No damage.

H. Armor Decks.

None aboard.

I. (combined with Item G.)

J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

No flooding.

M. Ventilation.

No damage.

N. Ship Control and Fire Control Stations.

No damage.

O. (Combined with Item N).

P. Ammunition Stowage.

No damage.

Q. Ammunition Handling.

No damage.

R. Strength.

No damage.

S. Miscellaneous.

None.

T. Coverings.

1. Paint.

(A) All vertical surfaces topside on starboard received flash burn. Top coat of paint was slightly blistered.

U. Welding and Rivetting.

No damage.

SECTION III

PART C - INSPECTION REPORT

SECTION B - MACHINERY

A. General Description of Machinery Damage.

No damage.

B. Boilers.

Not applicable.

C. Blowers.

No damage.

D. Fuel Oil Equipment.

No damage.

E. Boiler Feedwater Equipment.

Not applicable.

F. Main Propulsion Machinery

No damage.

G. Reduction Gears.

No damage.

H. Shafting and Bearings.

No damage.

I. Lubrication System.

No damage.

J. Condensers and Air Ejectors.

Not applicable.

K. Pumps.

No damage.

L. Auxiliary Generators.

Discussed under Item F (Main Propulsion).

M. Propellers.

No damage.

N. Distilling Plant.

No damage.

O. Refrigerating and Air Conditioning Plants.

No damage.

P. Winches, Windlasses and Capstans.

No damage.

Q. Steering and Diving.

No damage.

R. Elevators, Ammunition Hoists, etc.

Not applicable.

S. Ventilation (Machinery).

No damage.

T. Compressed Air Plant.

No damage.

U. Diesels.

Not applicable. See Item F.

V. Piping Systems.

No damage.

W. Hydraulic System.

No damage.

X. Navigational Instruments.

No damage.

Y. Periscopes.

No damage.

Z. Radar and Sonar.

No damage.

AA. Miscellaneous.

None.

SECTION III

PART C - INSPECTION REPORT

SECTION C - ELECTRICAL

A. General Description of Electrical Damage.

No damage.

B. Electric Propulsion Rotating Equipment.

No damage.

C. Electric Propulsion Control Equipment.

No damage.

D. Generators-Ships Service.

No damage.

E. Generators-Emergency.

Not applicable.

F. Switchboards, Distribution and Transfer Panels.

No damage.

G. Wiring, Wiring Equipment, and Wireways.

No damage.

H. Transformers (Lighting and I.C.)-

No damage.

I. Submarine Propelling Batteries.

No damage.

J. Portable Batteries.

No damage.

K. Motors, Motor Generator Sets, and Motor Controllers.

No damage.

L. Lighting Equipment.

No damage.

M. Searchlights.

No damage.

N. Degaussing Equipment.

Not applicable.

O. Gyro Compass Equipment.

No damage.

P. Sound Powered Telephones.

No damage.

Q. Ships Service Telephones.

No damage.

R. Announcing Systems.

No damage.

S. Telegraphs.

No damage.

T. Indicating Systems.

No damage.

U. I.C. and A.C.O. Switchboards.

No damage.

V. F.C. Switchboards.

No damage.

SECTION III

PART C - INSPECTION REPORT

SECTION D - ELECTRONICS

A. General Description of Electronics Damage.

No damage.

B. Fire Control Radar.

No damage.

C. Surface Search Radar.

No damage.

D. Air Search Radar.

No damage.

E. Radar Repeaters.

Not applicable.

F. Radar Counter Measures Equipment.

No damage.

G. Radar and Radio Beacons.

No damage.

H. I.F.F. Equipment.

No damage.

I. Communication Transmitters (Radio).

No damage.

J. Communication Receivers (Radio).

No damage.

K. Communication Antennae (Radio).

No damage.

L. Radio Transceivers (Combined Transmitters and Receivers).

No damage.

M. Sonar Echo Ranging and Listening Equipment.

No damage.

N. Sonar Echo Sounding Equipment and Altimeters.

No damage.

O. Loran Navigation Equipment.

No damage.

P. Power Supplies (Motor Generators and Filters).

No damage.

Q. Television and Teletype Equipment.

Not applicable.

R. Test Equipment (Including Frequency Meters).

No damage.

S. Instrumentation.

No damage.

T. Telephone Equipment.

No damage.

U. Direction Finders (Radio).

Not applicable.

V. Spare Parts.

No damage.

Classification ([redacted]) (Changed to CONFIDENTIAL)
By Authority of Joint Chiefs of Staff (Action 15 Apr 49)
By [signature] Capt Date [signature]

AFSWP

RESTRICTED DATA
ATOMIC ENERGY ACT 1946

CONFIDENTIAL

Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

9 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency (formerly Defense Nuclear Agency) Security Office has reviewed and declassified the following reports: + ST-H

AD-366748	XRD-65
AD-366747	XRD-64
AD-366746	XRD-63
AD-376826	XRD-60
AD-376824	XRD-58
AD-376825	XRD-59
AD-376823	XRD-57
AD-376822	XRD-56
AD-376821	XRD-55
AD-366743	XRD-54
AD-376820	XRD-53
AD-366742	XRD-52
AD-366741	XRD-51
AD-366740	XRD-50-Volume-2
AD-366739	XRD-49-Volume-1
AD-366738	XRD-48
AD-366737	XRD-47

TRC 9 April 1997

SUBJECT: Declassification of Reports

AD-366736	XRD-46
AD-366735	XRD-45
AD-366723	XRD-37
AD-366721	XRD-35
AD-366717	XRD-31-Volume-2
AD-366716	XRD-30-Volume-1
AD-366751	XRD-68-Volume-2
AD-366750	XRD-67-Volume-1
AD-366752	XRD-69
AD-366744	XRD-61.

All of the cited reports are now **approved for public release. Distribution statement "A"** now applies.

Ardith Jarrett

ARDITH JARRETT
Chief, Technical Resource Center

Completed
1 mar 2000
B.W